

NEW 25
DIRECTIONS
OF EXPERIENCE
TO THE COMMONS
COMPLAINT BY THE IN-

couragement of the Kings most excellent
Maieſty, as may appeare, for the plan-
ting of Timber and Fire-wood.

WITH A NEERE ESTIMATION
what millions of Acres the kingdome doth
containe; what Acres is waſte ground,
whereon little profit for this pur-
poſe will ariſe.

WHAT MILLIONS HATH BIN
Woods, and Buſhy grounds, what Acres are
Woods, and in how many Acres ſo much Tim-
ber will be contained, as will maintaine
the Kingdome for all uſes for ever.

AND HOW AS GREAT STORE OF
Fire-wood may be raiſed, as may plentifully maine-
taine the Kingdome for all purpoſes, without
loſſe of ground; ſo as within thirty yeares
all Spring-woods may be conuer-
ted to Tillage and Paſture.

Inuented by Arthur Standiſh.

Anno Domini. MDCXIII.

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By the King.

To all Noblemen, Gentlemen, and
other our louing Subiects, to whom
it may appertaine.



HEREAS Arthur Stann-
dith (Gentleman) hath taken
much paines, and bene at great
charges in composing and publi-
shing in a book, some proiects for the increa-
sing of Woods, the decay whereof in this
Realme is ~~un~~iuersally complained of: And

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therefore

therefore We would be glad that any inuention might further the restoring thereof: We have therefore beene pleased to giue allowance to this Booke, and to the Printing thereof. And if the same shall be willingly receiued of the Gentlemen, and others of ability, who haue grounds fitting for his projects, it shall much content Vs, doubting not, but that such as shall thinke good to make vse of the Booke, will deale worthily with him for his paines. And We are also pleased for the better encouragement of the said Standish, hereby to declare, that Our pleasure is, that no Person or Persons whatsoever, shall Print any of the said Bookes, but for and to the vse of the said Standish, and none others.

Giuen vnder our Signet at Andeuer, the first day of August, in the ninth yeare of our raigne of England, France, and Ireland, and of Scotland the fife and fortieth.

God saue the King.



New Directions for the planting of *Wood, by Arthur Standish.*



HEREAS It pleased the Kings most Excellent Maiestie, forth of his Princely respect, for the better repairing of the ruine of this Kingdome, for the good of euery particular person : the publique good of the Common-wealth, and the preseruing and maintaining of the same for all posteritie, to giue allowance to the Printing and publishing of the Booke, that I presented vnto his Maiestie, principally concerning the planting and preseruing of wood, as hath and doth appeare to all men, whereby I am the better animated by his Maiestie, and many other good men, to perseuere in so needefull and more then necessary businesse, and to apply my whole indeuour, to seeke out all possible means that may be found to effect the same : with the least charge & losse of ground, the better to incourage all his louing Subjects thereunto : by meanes whereof, together with the daily conference that I haue with many of the better sort ; and oft, for this purpose with Husbandmen, and workemen ; who (for the most part) haue best experience in this businesse, being loath to write more then by mine owne eie-sight I know to be true. Further, seeking to know the opinions and experience of many vnderstanding and good Common-wealths

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men, to seuerall ends; and hauing conference with some skillfull Surueyors of Land, and such as take vpon them to know the number of Acres, that are contained in this Kingdome: Thus, obseruing what I heare or see, tending to any publique good, especially for this businesse, I attaine to a neere estimation what Acres the Kingdome doth containe, what acres wil plentifully supply all wants, and maintaine the Kingdome for euer, being planted and preserued, as followeth: and how as great store of Fire-wood may be raised, being maintained, as may plentifully maintaine the Kingdome for all purposes, as well for the making of yron, and all other mettalls that the Kingdome doth afford for euer; so farre from the losse or hurt to land, as it may rather greatly better and improue it: First, it is generally decreed by all Surueyors, that the whole kingdome containeth nine and twenty millions, fife hundred sixty eight thousand acres, or neere thereabouts: whereof it is supposed that there is foure millions, and al the odde thousands waste, that yeeldeth little or no profite at all; and that there hath been within a hundred years last past, foure millions of woods and bushy grounds, that yeelded little profit, but wood and bushes, ouer and aboue Parkes, Forrests, and Chases.

Forth of which twenty nine millions, and the odde thousands, the wastes being deducted, which in effect is fife millions, the remainder is fife and twenty millions: whereon wood, hath, doth, or would grow, if it were planted and preserued: First, for this purpose, take forth of euery thousand acres, forty foure acres, inclose and plant the same according to the directions following: Wheresoeuer it lieth, plant foure acres of euery forty foure in rowes, so as there may be contained in a hundred thousand acres, so much timber as will plentifully serue the Kingdome for all vses, euery tree to be ten yards distant one from an other one way, and three the other, which can be no losse to such as shall plant, neither for their owne vses, nor for such as want ground to plant on; in respect that such as want, must be constrained to buy of such as haue to sell, which is so farre from the losse of any, as it will be for their greatest profite; for after twenty
yeares

yeares the forty acres will yeeld much more profite, either in
 corne or grasse then the foure and forty did before, ouer and
 aboue the benefite of the timber; and in the meane time, lit-
 tle or no losse. The like planting for fire-wood might bee
 made in rowes, as shall appeare, but it is altogether neede-
 lesse; for the very hedges, being planted and made as after
 followeth, will yeelde Fire-wood plentifully for all vses, as
 by experience shall appeare, so as within thirtie yeares it may
 be more then needefull to haue any Copies or Spring-woods
 at all, but that all Wood-land may be conuerted to Tillage or
 Pasture, to the particular good of the Owners and Common
 wealth. Further, shewing in particular, what publique good
 may arise thereby. In the meane time, it were very conue-
 nient, that the stocking vp of woods were preuented, ex-
 cept they were stocked vp into rowes, for it is generally con-
 ceiued, that within a very few yeares, there will be little or
 no wood left for any vse, the stocking & stubbing is so great,
 notwithstanding the Lawes provided, by the worthy King of
 famous memory *Henry* the eight, for the preserving of wood;
 which laws haue beene from time to time continued, and are
 still in force, and haue beene most earnestly called vpon by
 the Kings Maiestie euer since his comming to this kingdome,
 especially at euery high Court of Parliament, where he hath
 not onely required the continuance thereof, but also most
 earnestly giuen it in charge (especially at the last Parliament)
 that some course might be taken for the planting and preser-
 uing of woods, which assuredly (as I haue heard) was inten-
 ded at the last sitting in Parliament, the which cannot be vn-
 knowne to such as daily stocke and stubbe vp woods: neither
 respecting the displeasure of his Maiesty, nor the breach of
 the Lawes in that case prouided. In euery countrey wood is
 daily stubbed vp, especially within twenty miles of London,
 where wood is pretious, and too deare for the poorer sort;
 by meanes thereof, they are constrained to breake hedges,
 to the great decaying of wood, and to the grieuance of eue-
 ry man that hath woods & hedges, and to their great charge,
 which I finde generally complained of, and daily more and
 more wil be complained of: for (say the poore) Though they
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want victualls, that is too deare for them to get by their honest labour, yet will they not perish for want of fire, so long as it is to be gotten. The best remedy for the same, is, a generall Plantation, whereby no one man may feeble the losse that some few do, that plant; for as they plant the one day, the poore plucke or cut them vp the next day, if not the same night. Which, if all men should be constrained to plant, it would be as it is in *Worcester* shire with fruit, where the plenty is so great, as the stealing of some few is neuer missed: Euen so would it be by the generall planting of wood, and in time be growne so cheape, as the poore would rather choose to buy then steale it.

Also the making of yron and glasse, hath beene, and is the greatest decay of wood; notwithstanding, yron was neuer so ill, nor neuer so deare as it is at this instant, by the halfe, before so great store was made in this kingdome; & by all likelihood is likely to grow dearer: the reasons why it is so deare, are especially two; the one in respect that wood is so worne out, as many are constrained to give ouer the making thereof: which want may be supplied by the meanes following, namely, out of hedges by lop-wood, which will approuedly make as good char-cole for all vses, as any other wood, which may be continued so long as it shall please God the Kingdome shall endure: the other is in respect, that before so great store of yron was made in this Kingdome, the Merchants bought Cloth of the Clothiers, which beyond the Seas they exchanged for yron; which was better yron, and better cheap then the English yron: the want of which exchange, together with the transporting of Wooll beyond the Seas, the worthy trade of clothing is so decayed, as many poore people that were set on worke by the abler sort of Clothiers, are constrained to beg, that before liued well by their labour: Also there are millions of people that live in great feare, that they in a short time may fall into the like necessity, which are the Carpenters, the Shippe-wrights, the Plough and Cart-makers, the Ioyners, the Cowpers, and the Coach-maker. Whereupon it is generally conceiued by all men of iudgement, that enter into consideration of the premisies, that without a speedie

the generall Planting and Preseruing, both of Timber and Fire-wood be, the Kingdome by no meanes can be maintained another Age; which with small cost and labour (to willing mindes) in good time, may be preserued and maintained, as plentifully as euer heeretofore: as shall be proued to the glorie of God, content of his Maiestie, their owne selues, posteritie, and Common-wealth.

Concerning the Planting and Preseruing of Timber, all men with whom I haue conuersed, are of one minde, that a better direction then herein is set downe cannot bee deuised, which is, by planting groues of a Roode, or halfe a Roode of ground in a Groue, in pasture grounds (or as followeth,) especially in Rowes, whereby much more timber may be raised in lesse ground as shall appeare; which being performed, there will be timber enough for al purposes, with the surplusses of Timber that may be planted and preserued in Forrests, Chases, Parks, Commons, or common Pasture, and much the better it will continre, if it be so prouided, that none shall fell or other-waies make away any tree or trees, but to be enioyned to plant and preserue so many as shall be felld, or other-waies made away. Thus may Timber be raised two seuerall waies; the one in Groues, the other in Rowes: for Groues, such as haue but one hundred acres, and so for such as haue more, to inclose for euery hundred acres, one seuerall Rood in some corner of a Close, which is already inclosed, for the ing of chrsauages, where halfe of the Fence is already made, and is to be maintained notwithstanding this deuice; or rather in the midst of a Close, although the charge be something the more, where the cattell may not onely haue shadow in Summer, but also shelter in Winter, euery way the better. To improue the close and cattell, the plot of ground for this purpose of one roode, would be in length tenne pole, in breadth foure: in which length there is contained fifty five yards, and in breadth twenty two yards. In which plot of ground there may be planted five rowes of trees for Timber, and in euery rowe there must bee digged vppe foureteene plots of a yard square, which should be digged vp two seuerall times, betweene Midsummer and Michaelmasse; and a-

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gaine,

gaine, when the meanes following are to be set, according to the nature of the soyle, and the directions following; euery plot to be foure yards distant euery way one from another; so there may be contained in a Rood of ground three-score and tennetrees. And in euery of these plots so digged, there may be set nine, a foote one from another, (either Akornes, Chessnuts, Beech-maste, Keyes of Ash, Rootes or Chips of Elme) being so set, & come vp, the ground would be weeded twice, or thrice the first and second yeare, if occasion serue, and after foure or five yeares, when it may be discerned which of the is likest to be the best trees, there would be but foure left, the other would be drawne vp and planted else-where at the Owners pleasure. And after sixteene or twenty yeares three of the other may be felld, and made away for some vses; and onely one, being the very best, to remaine; from which all the leaues would be plucked off by hand within a foote of the top, in the beginning of Iune, so long as a man can reach them, and afterwards cut off with a knife, or light Forrest bill, made for that purpose. The reason why I wish the planting of Groues to be in so many seueralls, is, that when a Groue is felld, it should be all felld: for the felling of trees in woods at seuerall times, hath beene a great decay to wood. And further, by experience it may be proued, that seldome good timber groweth of old stocks; by reason whereof, I could wish that trees should rather bee stocked vp, then felld, that the ground might be planted againe. The second way for planting in rowes is as hereafter followeth.

*For the planting in Barren, Champaine, or Gorsie grounds,
either for Timber or Fire-wood.*

IF in all Champaine Countries, where land is barren, and well so scant, that they are constrained to burne the straw, and manure, which should be imployed to the manuring of land; the want thereof is the vtter vndoing of many a Husbandman, who tilleth much land, soweth much seed, and reapeth much losse, for want of manure, If therefore (I say) not
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onely of my selfe, but also in the opinions of many vnderstanding men, inhabiting in such countries, that if some part of their barest grounds that lieth so far from the town wherunto it doth belong, that seldome, or neuer it is manured: by reason whereof it oft lieth ley, and yeeldeth no profite: if for this purpose, there were eleuen acres of that land, as it lieth together, and that one acre of the eleuen were planted with wood in rowes, and after that rate for more or lesse, according to the number of the Acres that are in the possession of the Lords of Land, and their Tenants in euery towne; which acre may thus be planted: (first it is to be vnderstood, that a statute acre doth containe in length 220. yards, and in breadth, two and twenty. First make a good Fence, according to the directions following, and then beginne at a side of the eleuen acres, and measure ten yards in breadth, and in euery eleuenth yard digge vp fife and fifty plots of ground of a yard square; and so in euery eleuenth yard from side to side: Euery plot to be three yards betweene one an other in the rowes, ouer and aboue the square yard for fire-wood; for Timber but two yards betweene the square yards, so as there may be three score and fourteene plots in euery rowe, and so planted and obserued, as before is declared. Whereby there may be contained in one acre, one thousand six hundred and odde trees for timber: In foure acres of the thousand, six thousand and foure score, euery tree to growe one from another tenne yards one way, and three the other; and for fire-wood, one thousand one hundred and tenne. There may be also contained in one entire acre, one thousand two hundred and ten trees for timber, euery one to haue foure yards of ground to thriue on.

These Directions may be obserued by such as are desirous to plant spacious grounds, so farre from the losse of ground, as the ground thereby may be much improoued, especially if the ground be barren, by letting it lie ley foure or fife years after it is planted; which lying will better the ground, so as it may be plowed between the rowes, and sowne with corne, and for two or three yeares haue good croppes: in which time the plants will be so growne vp, as it may be a sheepe-

pasture, till the wood be past taking hurt by cattell: in which time the shadow of the trees, and the rotting of leaues, and the manure of the sheepe will better the ground, so as it will be good medow, pasture, or corne ground, at the Owners pleasure, for his best profit. This were a very profitable course to be obserued in sheepe-walkes, on Downes, where hedge-wood is scant, as commonly it is in such barren grounds. The best way to inclose, is (if it be in swarthy grounds) to set the aforesaid meanes as a foote-set of thornes without any ditch, and to raise the Fence of either side by walles of Soddes, as is to be seene betweene *Lincolne* and the Horse-race, or as commonly sheepe pennes are made in Downes and Heaths: If no swarth, by a double ditch, and set the meanes on the top of a banke, being made a yard broad on the top, so as a hedge of a foote high of either side will serue to defend it; and by a like planting in all gorsie grounds, where gorsie groweth so naturally that the Owners of the grounds can by no meanes destroy it: great store of timber or fire-wood may be raised, with the other profits, and the soyle much improved: for after the trees be past taking hurt by cattell, the gorsie betweene the rowes may be stocked vp, so as the tenne yards of ground betweene the rowes may be sowne with corne, and being limed when it is tilled, the lime, together with the shadow of the trees, will approuedly so destroy the gorsie, as the ground will be recovered to be corne, medow, or pasture. Inlike sort, all broomy ground may be improved. Some that haue gorsie grounds, haue obiected, that if their gorsie should be destroyed, they should be damified thereby, in regard they haue no better fewell. To such I haue giuen good satisfaction, that it is not intended, that the gorsie should bee destroyed, before the wood bee past taking hurt by cattell, when the wood will yeeld better fewell, and better store.

How to improve barren ground.

THE best remedy for barren grounds, either for sandy or clay, for fruit-trees, or any kind of wood, to make them grow speedily, & without mosse, is for sandy land, to make a
hole.

hole, so bigge, as it will holde the 'quantitie of three bushells of good earth, and a bushell of vnflecked lime; then put into the hole a third part of the lime, and vpon that lime, lay a third part of the earth, and vpon that earth, another part of the lime, and vpon that lime a third part of earth, and so the rest: and in like sort sand and lime for clay land, and so lay more or lesse, as occasion serueth. Thus mingle them together, and let it lie a quarter of a yeare before it is to be vfed; and when you remooue a yong tree, or set a stocke to graffe on, lay vnder, and about the roote a bushell of the lime and earth well mingled together, and powre thereon a paille full of water, which water will wash the earth close to euery roote. And to any kind of Peach or Plumb-stone halfe a pecke; and for Chessnuts, Akornes, or any other kinde of seedes of wood, vse this mingled earth in discretion, and approouedly thus being vfed, they will grow more in one yeare then in any other ground in two, though the soile be good: and it is a speciall good manuring for corne, the nature of lime is to make clay-land lighter, and sand-land stiffer, as partly may appeare in buildings, that lime and sand do make mortar, when it is drie, as hard as stones.

For the planting of Timber-trees, or Fire-wood, in Forrests, Chas- ses, Parkes, Commons, and common Pastures.

EXperience hath, and may teach all men to know, for it is to be seene with the eyes of all men, that in all ages, bushes haue beene, are, and will be (if they be preserued) in all grounds, the mother and nurse of trees, so that all men may take notice thereby, that by the digging vp of a hole a foote square, and three or foure fingers deepe, in the midst of any tuft of bushes, gorse, furies, or whins, as some terme them, or in hollinbushes, and therein to set 3. of the mast of oake, chessnuts, beech, keys of ash, the roots, or chips of elme, or rather rootes or sykamore seeds which wil grow as fast as any other wood, the body good for little, but for to make trenchers, or drinking-cups, and for those vses, better then any other wood growing in this kingdom, as before is set down:

any of these, according to the nature of the soile, wherein these are to be planted: out of which three it is not to be doubted, but one of them at the least, wil grow and prosper, the bushes being preserued about them, till the plants be past taking hurt by cattell. This may be performed with a small charge, for a man may set a hundred in a day at the least, by experience I speake it, which can not cost aboue twelue pence (a thousand for ten shillings.)

Many there are that like wel of this planting of wood, and many doe obserue it, that before were desirous to raise wood, by taking vp of yong trees where they did grow and prosper; which are weary of that kinde of planting, by reason that for the most part, halfe of them doe not grow, which mooueth many to obserue these directions: And some there are that say they like these directions well; but say they, it is against the nature of this Age to tarry so long for profite. To which I answer, That if the Ancestors of noblemen, gentlemen, and others, had had so little respect to their posterity, as we haue in this Age; there are some noblemen, and many others, that would haue been constrained to haue sold a great part of the land their Ancestours left them, to supply the wants which they haue supplied by their woods; and it will fall so out ere it be long, that such must sell land, for wood their Ancestors will leaue them none to sell. And to content such, and all others, I haue added by experience directions for this present Age, as followeth towards the latter end of this Booke.

For the planting of Fire-wood about Parkes.

HOW all Parkes may be fenced by fire-wood, so as after tenne or twelue yeares it will be stronger then any pale; and after forty yeares stronger then any wall, and longer lasting by many degrees: and being once made, neuer to be made againe, with the charge and profit that may arise thereby. Say for this purpose, that there is a parke to be fenced of foure miles pale-walke, which miles containe in length thirty two furlongs of Statute-measure, euery furlong containeth forty poles, euery pole five yards and a halfe: Admit there were no ditch at all about the pale, nor wood (as commonly there is)

is) and that all were to be ditched and fenced anew, with a ditch of five foote wide at the top, a foote and a halfe broade in the bottome, and three foot deepe, and that this ditch, with the getting and setting of the meanes aforesaid, for the planting of timber, should cost twelue pence a pole; the totall of the charge three score and three pounds at the most: for it is certaine, that much of this may be saued: for in many places the ditch cannot be so chargeable; for about many parks in some places, there need no ditch at all, and in some places, a lesse ditch will serue. Neither can the hedging be chargeable in two respects; the one, by reason that about many Parkes, there are many thornes growing, which being felld to make the fence once, will afterwards so grow vp, as they will defend the wood so set without any further charge; and about many parkes there is as much wood growing as will defray the charge: so as to some the effecting of this busines, will be little or no charge at all. The earth of this new ditch must be cast to the pale-ward, so as the banke may be a yard broad on the top: fence there needeth none, but long bushes so put betweene the pales aboue the railes, as they may reach and hang ouer the banke into the ditch.

This being done, for such soiles as by experience Masse and Seeds will best like of, as may best appeare by the wood thereon growing, the Masse would be gathered as it falleth from the tree, and not beaten downe before it be ripe. The Ash keyes may be gathered about Alhollontide: being thus gotten and gathered in, they would be kept neyther too wet nor too drie, till they be set, according to the directions following. The rootes of Elme are to be gotten by baring olde Elmes at the roote, betweene Alhollontide and Candlemasse, when the sappe of trees is in the rootes, from whence there may be taken, without hurt to the Elme, many yoong rootes of the bignesse of a little finger, and a foot long: And as of Elme, so of Wiche, being a wood as apt to grow speedily as any other, which are to be cut from the olde rootes. These yong roots would be set as a foot-set of thornes within a foote of the pale, so as the thornes may hang ouer them; set in the ground, and one inch out of the ground: so like-
wise

wise in the sides of banks, as quick-sets, they are to be set in 2. rowes, 3. fingers broad betweene the rowes, and so set as they may not stand directly one against another. The maske and seedes would also be so set in two rowes, three fingers betweene euery rowe, three fingers deepe, and foure in a foot in either rowe. The boughes of Elme, Willows, or Sallow, would bee lopped from the trees betweene mid-March and the middest of Aprill, when the sappe is in them, and before the leaues put foorth; they would be of three or foure yeares growth, of the freshest, sappiest, and knottiew. Thus being lopped from the trees, they would be cut in length of a foote long, colt-footed at either end, the boughes and twigges being cut off close to the body: they would bee laid in trenches in two rowes, three fingers deepe, with the knotty side vpward, and three fingers betweene the rowes a hand breadth one from an other, and couered with earth, which is neither weedy nor grassie. These boughs would be laid the same day that they are lopped, or the next day after at the farthest, or set in the ground as sets a foote deepe.

This being done, they will within fixe or seuen yeares bee growne so high, as the plants may be bended, and laied as a plashed hedge, but not cut at the rootes: the reason is, that being so yong the plants will easily bend, which way a man will haue them, and when they are to be laid, the rowe that is to be laid, would be shread close to the body, and topped so high as when they are laid, the toppe may lie seuen foote wide from the roote, and so high as a beast may not reach the tops: And when the rowe is in laying, if they grow thicker then a foote asunder, some may be cut vp for bindings, to binde them downe that are plaide, for thicker then a foote asunder is needelesse for them to be laide. The other rowe would be yearely shread, and kept with small tops, the lesse to hurt the Fence so laid, and some of them are to be bound into the fence so laid, to stand three or foure yeares for stakes, so as those that are thus bound downe after two or three yeares, will continue so, and lie as railes; and if cattell bee kept from the browsing of them but a yeare: the boughes will spring foorth of the knots, so as the Fence will
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be both thicke and strong, and much the stronger, by the helpe of the other rowe, which after the fence of it selfe is growne strong, may be felled and imployed to other vses. This in common reason (as I said before) cannot but in ten or twelue yeares be a stronger Fence then any pale, and in a short time stronger then any wall, and longer lasting, without further charge. And this for experience, in part, may be scene in all wood-land countries, especially in Fences about Woods, where it is to be scene, that for want of thornes in many places all kinde of woods are plashed, and thus laide, which in some places haue laine so long, as they are growne so great, that they are incorporated one into another; notwithstanding liketh very well, and yeeldeth much fire-wood by lopping off the toppes and boughs that are growne forth of them so lying.

And as in this, so in other things, by experience I write of that which mine eyes haue scene in many places for two or three poles together, where there haue bene fiue or sixe heads growing out of one tree so laide. And for the better prooffe hereof, I haue also scene, as I haue rode by the way, in an Orchard (in little *Waltham* in *Essex*, foure miles at the most from *Chelmsford*), an Apple tree that was blowne downe many yeares since, which lieth close to the ground, the root hauing some small holde in the ground, which hath put forth of the body so lying, fiue trees at the least, which are so nourished as they beare fruit. I haue also scene in a towne within two miles of *Stone* in *Stafford* shire, in a ground of maister *Ratliffes*, a Peare-tree that was likewise blowne downe, bigger then a fadome about, that stood in a hedge, which tree lieth a yard from the ground, being staid so by two boughs that sticke in the ground, which hath so taken roote, as thereby, with the helpe especially of some part of the roote, that it hath also put forth, and nourished fiue trees as bigge as the calfe of a mans legge, which grow a yard one from another; whereby it may the better appeare, that this kinde of Fencing may bee perfourmed, not onely with wood, but also with Apple and Peare-trees, if neede required, with such as like thereof, to the good of themselves and common-wealth.

Another kinde offencing there is, that many do like better of, then the laying of the wood, as is aforesaid, which by experience may be performed by letting the plants grow, and neuer to lay them, but yearly to shread the twigs of the one rowe, that after is to be felld, so as they may be kept with small toppes, the lesse to hurt those that are to remaine for the Fence, which rowe that is to stand for the Fence, would be topped at sixteene or twenty yeares growth, fifteene or sixteene foote high from the ground, and againe after eight yeares, and then for the better encreasing of fire-wood they would be so lopped, as there may be as well three heads of a tree, as one, and euery head to yeeld as much wood, as if there were but one head of the tree: if when the worke-man doth top a tree, he would top it where the tree putteth forth most boughes, within three inches about the knottiest place of the tree, not too flatte, as many worke-men doe, but sloping, the lesse to take water for the rotting of the tree: at which second lopping, all the boughes would bee lopped off close to the head of the tree, but onely three of the greatest; the one that groweth directly vp, to bee topped halfe a yard about the head of a tree; the other two would be of those that growe outward, from either side of the tree from the rowe-ward, the lesse to hurt the rowe by dropping: which two would be lopped foure foote off from the body of the tree, by which meanes, as well from this, as from the other kind of fencing, there may be lopped from a Parke of foure miles pale, yearly, after one and twenty yeares, two furlongs of sixteene yeares growing; and as in euery pole there was sixteene let to grow, so there are sixteene to be yearly lopped, which being husbanded, as aforesaid, would yeeld eight and forty heads, whereas if they should haue but one head a peece (as they haue three) could not yeelde lesse then three loades of wood in a pole of sixteene yeares growing; worth to be sold two shillings sixe pence the load, ariseth to tenne pounds a yeare. The timber for paling and workmanship yearly saued, which can not be lesse worth then sixe pounds, (which timber is more then needefull to be saued) besides the profite of the browse for Deere) mast for hogges, and barke for the tanning.

tanning of leather, which would arise to be much worth, if the wood might grow vntill it be twenty or foure and twenty yeares olde, which then would also yeelde many good sparres for the building of out-houses and cottages, with good store of worke for poore laboring men, by lopping and faggoting the wood. This direction were very profitable to be vsed about spring-woods when they fell their wood, and make their hedges, so as it may be made once for euer to great profite. What reason any man hath to omit this, I leaue to be censured by the discret Reader.

*For the increase of Fire-wood, by the
Lopping of trees.*

FOR the better increasfing of wood by lopping of trees, experience will teach all men to know, that will obserue it, as hee rideth on the way in euery Countrey, especially in *Cheshire*, neere vnto the *Wiches*, (where salt is made, and much wood is spent by the boyling thereof,) that euery tree will as well yeelde fise or fixe heads, as one, if workemen, when they loppe trees, would obserue the directions before set downe, for the topping and lopping of trees about parks, and in hedges.

For the increasfing of fire-wood in hedge-rows, between decayed trees, the best remedy is, that when such trees decay, and haue lop-wood on them, of the age of tenne or twelue yeares, within a weeke of the first day of August, or within a weeke after, when the sappe is in the tops of the trees, to set a discrete workeman into the trees, and there with a sharpe knife to cut off close to the head of the trees, all the barke a hand broad that groweth vpon the principall boughs that be likest to make trees, so cleane that he leaueth not the breadth of a haire, but rather cut part of the wood then leaue any of the barke: This being done, presently get good clay, and let one worke it to the breadth and thicknesse of a tile, and so long, or longer, as it may well lappe about the bough so pared, then lay thereon some fatte earth two or three fingers thicke, and lay the same clay and earth vpon the barke of the

bough next to the plot so pared; and with mofse and bands binde these same on, like vnto a grasse, and so let it rest, and about Alhollontide, then make holes in the ground where you would haue them to grow, and presently saw off with a hand-saw the boughs so clayed, betweene the clay and the plot so pared, and so doe it as the earth be not shaken off, carry them, and set them halfe a yard deepe, fill vp the holes with limed earth halfe a yard broade about the plant and tread it well; if the ground be barren, make the holes so much the wider, and fill them: Being so set, stake them, and binde them as other Sets, and assuredly they will grow and prosper better then other Sets, or transplanted trees: If they be set betweene trees, loppe the olde trees before you set them, that they be not cuer-topped, nor dropped by them: these being either elme, willow, or fallow. As for other wood, I haue seene no experience (but of some boughs of Apple and Peare-trees, which being thus vsed, haue borne fruit the same yeare they were set,) I can finde no reason to the contrary, but that other woods may grow and prosper as well as these. This is the most speedy way to beget woods.

All these Directions being obserued, there may bee in good time, more timber, fire-wood, corne and catell contained in this kingdome, then hath beene at any time these three-score yeares, and yet no woods at all: so that the soile of all woods in time may be conuered to tillage, meadow, or pasture, to the profite of the Kings maiesty, all Posterity, and the Common-wealth. The kingdome thereby may bee the better defended from forren enemies by the Nauigation, the bankes of the Seas, and ebbing and flowing riuers defended, staies maintained; all which cannot bee maintained but by wood, without which defence a great part of the kingdome is in danger to be ouer-flown and ruinated: some proofes thereof were to be seene this yeare one thousand six hundred and thirteene, neare *Blackewall*, where was a Breach that hath and will cost two thousand pounds to recouer it: And this winter, to the vtter vndoing of many an able man, in many places of this kingdom: the charge of staies and banks in many ebbing and flowing riuers, is chargeable to many, especially

ally in the riuer of *Ouer*, where the maintaining of staies and bankes costeth the Bishop of *Durham* at the least a hundred markes a yeare, and is very chargeable to sir *Thomas Mettam*; and all that haue grounds there, that are charged thereby, according to the proportion of their grounds. The decay of these bankes may in one tide drowne much land, and many townes: which the obseruing of these directions, & some other following, will preuent.

The wood that may be raised about parkes, and the hedges within this kingdome, would raise many profites to the common-wealth, as the making of yron, and all other kinde of mettalls which the kingdome affoordeth, together with the burning of lime for the manuring of land, and buildings, and burning of bricke and tile for building, with many other profites to the kingdome.

*For the increasing of wood in the
Springs of wood.*

VV Hereas in springs I find many waste places growne ouer with grasse, by reason whereof, men couet to put in Calues and Horses, which are great spoiles to woods. The onely way to furnish such places, especially in barren grounds, which may best be spared for wood, vntill such time that the other woods be growne vp, is either when the Spring is fise or fixe yeares growne, or when it is felld, to digge vp certaine square yards, according to the spaciousnesse of the ground, three yards betweene euery plot, and therein to set, or lay in trenches the aforesaide meanes, as is before set downe; and when they are growne vp fise or fixe yeares to plash them close by the ground, and lay them in Trenches euery way from the roote three fingers deepe, and to couer them with earth, and so of all other wood that groweth of olde rootes, so as there may not be a waste place nor any thornes left to grow, but prouing wood.

As for other grounds that are woorth twenty shillings an Acre yearly, (which is too good for wood to grow on) but

that the decay of wood is too great, I could wish that it were stocked into rowes, either for timber, or to top and lop it for fire-wood.

And whereas it is required by the lawe, that there should be a certaine number of trees preserved for timber, which is by few men performed, the reason is, that the dropping and shadow of them will destroy the vnder-wood, which is most true: my aduice is, that rather the number of timber-trees might be preserved in some corner of the Spring, where they may be preserved from many dangers which they are subiect to, as they are left in the Springs.

Concerning the planting of wood in hedges already made with thornes.

SOME do obiekt, that the planting of wood in them will so destroy the thornes by the dropping and ouershadowing of them, as there will be no good fence kept. To such I answer, that if they would the next yeare after that they cause a hedge to be plashed, & the ditch thereunto belonging scoured, and some small quantity of the earth cast vp to the roots of the hedge; for too much earth so cast to the rootes of the hedge decay the hedge, and that they would set in the same earth such meanes as is before set downe, and so vse them, they might at any time after twenty yeares, haue both good store of wood and thornes, and also haue a stronger fence then any thornes can make. The charge of the setting and getting of the meanes in common reason can no way cost two shillings a furlong, for two men will set at the least two furlongs a day, the one man to make holes to set them in, and the other to put in the meanes, and couer it. The profite that may arise thereby is before set downe for the profite of parkes.

Concerning such as hereafter may inclose.

IS to inclose with the aforesaid meanes, and not with thornes, whereby with lesse charge & labour they may raise a fence stronger and longer lasting, with greater profite, by the setting of
of

of the aforefaide meanes, on the top of the bankes, as is fet downe for Parkes, which (by experience) will grow more speedily then thornes, and make a better fence; (as is prooued) that will with a good Gate, Locke, and Key, keepe all Cattell safe from stealing, and from breaking into any other grounds then the owner would haue them, safe from trespassing to his neighbour, or his neighbours to him; whereby much corne may be saued, trespassing preuented (which too often raiseth enuy, and suites in Lawe.) The browse of the wood in winter will greatly relieue cattell, and saue fodder: And being wood that will yeelde maste, the maste will be very beneficiall to the particular Owner, and Commonwealth.

*Directions for such as are desirous to stocke vp woods,
for the improouing of the Soile.*

BY conuerting of the same to corne, medow, or pasture, & to haue as much, or rather more profite by the woods, then they had before; is, first, to leaue a yard in breadth round about the sides, for the maintaining of the fence, which may be made once for all, by obseruing the aforefaid directions: Then beginne at a side next to the wood so left, and stocke vp all the wood whatsoever, so as the ground may bee plowed tenne yards in breadth, and in the eleuenth yard stocke vp all but fifty five of the best trees, which trees would (as neere as may be) be so left, that they may grow foure yards distant one from another, from end to end, as trees planted in an orchard: and so stocke vp from side to side, and from end to end, leauing the like distance, so as there may be ten yards distance one way, and foure an other from tree to tree: by which meanes, in euery two rowes, there may be left an hundred and tenne trees out of euery Acre, how great or little soeuer the ground be: which being topped, and after twelue yeares lopped, with many heads (as they may be by the directions already fet downe, or rather for a greater profite, left vnlopped till the wood be of twenty yeares growth) the profite thereof, by the greatnes of the wood, and the barke, with
the

the profite of the wood that may arise about the fence (being made as before is directed) will farre exceed the profite of the vnder-wood growing of all the ground before.

But as the case standeth, and as is more like to stand, by the want of timber, if all the trees were left for timber, and neuer topped nor lopped, would, in time, arise to the greater profite; especially if they were euery third yeare shread in March, when the sappe is rising vp, and the wood worth the shreading, which sappe would so grow, as it would couer the knottes, by which meanes the trees will grow taper-like, with so small tops, as the ground betweene the rowes may be plowed three yeares, and may be laide to grasse for nine yeares; so may you haue from time to time three yeares good corne, and nine yeares good grasse, and neuer to decay the land, but rather to improue it. The trees beeing thus kept with small toppes, can neither hurt corne or grasse, by dropping or shadow.

Some doe obiekt and say, that if all Spring-woods were so stocked, how should hurdles be gotten for the folding of sheepe? To which I answer with experience, where wood is not lopped too young, some of the greatest boughes being lopped and barked, and then laide in water a moneth, they will be so rated, and grow so hard, as wormes can no way hurt them: and beeing so vsed, will make farre better and stronger hurdles, then any young rods whatsoeuer, as may appeare in many Countries of this kingdome where wood is so scant, as they are of necessity constrained to vse willow boughs for spars and laths for many houses, and to vse them about ploughs, carts, and harrowes.

Others do obiekt, that the grasse in such wooddy grounds will be so sowre as cattel wil not like of it. To that I answer, that if the rowes be planted East and West, or so stocked, as the ground betweene the rowes may haue the morning, noon and euening Sunne, the pasture will be as sweet as any other: the corne will as well like of it as of any other ground, and will as well drie when it is cut, or if the cattell bee put into such grounds before they taste of a sweeter grasse, they will like as well of that grasse as of any other. And for the better
proofe

prooffe thereof: Who euer saw grasse loft for the eating, in any forreft, chafe or parke, where trees grow thicke, notwithstanding the cattell in fuch grounds, (if they be not eaten too bare) like very well, by reason of the shadow in Summer, and shelter in Winter.

A further experience may be taken, to incourage all men hereunto, from about thousands of towns in this kingdome, where are to be feene little closes, of two, three, foure or fiue acres of ground, as haue so much timber or fire-wood growing about them, as if it were at this instant to be sold, would giue more money then the fee-simple of the land. Whereupon it followeth, very fittingly for this purpose, to shew what good may arise to the particular owners of ground, by obseruing these directions set downe in sundry places for these purposes, and how the kingdome may be improoued, onelie by wood planted about Parkes, and in Hedges made, and heereafter to be made of wood, so farre from the losse of any, as it may be to the generall good of all men, euen to the very poorest, whose reliefe I greatly desire.

And for my further experience, I sawe about Christmas last, a close of sandie Land of foure Acres, taken in the middest of a field belonging to *Downam* in *Norffolke*, about forty yeares agoe, and set round about when it was taken in, with young sets, (as it was confessed to me by the Owner thereof) of Ashe, rootes of Elme, and Thornes, and the most part of the stakes of the Hedge, were of Willow and Sallow, which Stakes and Settes of Wood did so take roote, as vpon my credit there is growing about the saide close fiue hundred fiftie and odde trees, of the aforesaide wood, whereof the Owner confessed vnto mee that hee did euery yeare loppe fiue and fiftie of tenne yeares growing, the which wood hee could yearely sell for forty shillings, and the foure Acres of ground hee could not let for aboue fixe and twentie shillings and eight pence yearely: So that I doe find by experience, that the most sure way to performe this planting, is to make nurseries, which may be kept from Mice by trappes.

And that the simplest may the better vnderstand it, admit for this purpose, that a man haue fixe score Acres of ground in his owne occupation, and that it were equally diuided into twelue Closes, and that but halfe the Fences about those twelue Closes did belong vnto them, by reason that they are ioyning to other mens Closes, (as commonly all inclosed grounds are) there remaineth to euerie of those Closes, an end, and a side, at the least, of the Fence, which containetwo furlongs, which is foure-score poles to a Close; all which hedges being planted, according to the directions set downe for hedges, there will arise about these twelue Closes foure and twenty furlongs, whereby the Owner of those Closes, may after thirty yeares, loppe yearly the wood about one Close, being two furlongs, or one furlong of foure and twentie yeares growth; which is the greater profite by much, by reason that the wood being growne so great, it would yeeld sparres for the building of barnes, stables, cottages, and such like straw-thatched houses, with good store of Barke for the tanning of leather, with a greater plentie of Mast, then being lopped yonger, it would yeelde, with many other profites to the Owner thereof, and to the good of the Common-wealth.

The Mast that may arise by this generall planting, will saue more corne (in those yeares that it taketh) then the wit of man can imagine it to be worth. A late experience thereof may bee taken from the yeare of our Lord one thousand fixe hundred and eleuen, by the Mast that the small quantitie of wood that is left, yeelded that yeare: which Mast fed so many hogges that yeare, as it greatly eased the prises of corne, and other victualls. For the better prooffe thereof, it is certaine, vpon confident report of seuerall honest men, that there was saued (by Mast) in some one towne in *Leicester-shire*, forty quarters of beanes and pease; and in some townes more, and in some lesse: which hogges were driuen into *Shropshire* to Mast, which in former Ages was a common course, before woods were destroyed, for the champaigne Countries, to feede their hogges in wood-land countries.

tries : In which times the Officers of Noblemen and Gentlemen tooke twenty or thirty pounds a yeare , for the feeding of hogges in a Parke , or in a Wood, which hardly now take five pounds ; and in many Parkes or Woods, not one penny, the woods are so made away.

So (to conclude) he that obserueth the aforesaid directions about the twelue Closes, may yearely loppe eight score load of wood , of twelue yeares growing, woorth to be solde at two shillings sixe pence the load, twentie pounds, and much more, if the closes be lesse. Whereby it appeareth, that all Grounds inclosed , and that heereafter may be inclosed, may be improoued three shillings and foure pence an Acre yearely.

(* *)





**A second Direction, for the present
encreasing of Fire-wood, agreeable
 to the nature of this Age,
 1613. February 1.**

HEaring daily, shat this more then necessary busi-
 nesse is much desired to be effected, the subiects
 thereof much commended, and the daily destru-
 ction of woods greatly complained of. In respect
 that so many, contrary to the Law for preserving
 of wood, and his Maiesties earnest and daily desire for the plan-
 ting and preserving thereof, notwithstanding doe so stocke vp,
 and other wayes destroy woods, as it is generally feared by ma-
 ny good men, that in short time, there will be neither timber
 nor fire-wood left for any vse. And finding one of the greatest
 hinderances to this businesse, to be the nature of this Age, that
 men may not indure to tarry so long for profit, till timber may be
 raised: in regard thereof, stil hoping that I am animated by God,
 who is the Author of all things that good is, and as it doth ap-
 peare by the Kings most excellent Maiesty, and induced by many
 good men by seuerall meanes, I haue by diligent obseruing what
 I heare, and the experience that I daily see (and is to be seene,
 by as many as will be mindfull thereof) I haue herein set downe
 such profitable directions, as already hath moued some, and I
 hope hereafter will moue all men to the obseruing of them, both
 for timber and fire-wood.

In respect that it will appeare, that there is not many deuices
 to improue grounds, to so present and continuall profit cleare, all
 charges defrayed, and for the better vnderstanding thereof, as
 before, so heere; I do giue further knowledge to all men for this
 purpose, that there is contained in a Statute Acre of land 4840.
 E square

square yards of ground, the length thereof 220. yards, the breadth 22. which is 66. foote, admit for this purpose, and after that rate for more or lesse, as men are disposed, either for their owne vse, or for sale, that a man would inclose eight Acres of earable field-land (or plant in a close of eight Acres already inclosed) the land being of the yearely value of five shillings an Acre, or not above a noble, where the soile is two foote deepe or lesse, or of any commons, heaths or downes. First, to the principal point (without the which, and for want thereof, many good beginnings end in nothing) this ground must be first ditched on either side before Allhollantide, with a ditch two yards broad at the top, a yard and halfe deep, and a foot broad, or lesse in the bottome, which ditch sides and ends will take something more then the third part of an Acre. The side ditches being made as afore, beginne and measure from the edge of the ditch in the inside of the close twelve foot in breadth into the close-ward, and plow vp two furrowes along from end to end by the earth, cast forth of the ditch as streight as may be, one, one way, the other, the other way, (plow cleane, but not deepe) still plow vp two furrowes, and leaue two foot vnplowed, till it be so plowed within two and twenty yards of the other side, and so leaue that two and twenty yards to plant the meanes for to raise timber, if the Owner please, if not, plow on till all be plowed to the earth, cast forth of the other ditch, and at Candlemasse plow in the two furrowes againe very deepe, so as they may lie as little ridges full two foot broad on the toppe, and two foote betweene euery ridge, then presently ditch vp the ends as the sides, and leaue one gate-head for carts or waines, to passe into the woods, and betweene Michaelmasse and Allhollantide, when Akornes, Chesnuts, and Beech-masse is ripe, gather them as they fall from the trees, for being beaten downe before, they cannot so well growe and prosper; and it is one speciall cause where many is sowne or set, and so few come to perfection, if the soile be best for Elme, then the chips or roots of Elme, but specially the roots, being set as quicke for timber, but not for vnder-wood.

These masts must be got and kept drie in tubs in the ground, with some very drie sand so put among them, as some sand may be betweene euery of them, some do make holes in dry ground, and

and keepe them therein, being well couered, to keepe them drie, and so keepe them till mid-March, that corne is in sowing in the fields, and the mice returned to fields (which mice this yeare, by experience, I finde to be the greatest enemy to the increasig of wood that is, for this yeare they haue eaten Akornes that were lapt in haire and tarre) and then set, sowe, and vse them, according to the directions.

The Ash-keyes and Sekamore seeds, may be pulled or beaten downe when they are ripe & drie, and kept on heaps on boorded floores, they must be turned ouer sometimes, else they wil mold, and in like sort sowe them in March, and beginne and sowe them all ouer the earth, cast forth of the ditch, round about the close, and all ouer euery ridge, as thicke as Beanes, and harrow them in, or rather couer them with an yron-toothed rake.

And further, to furnish vp the rows so plowed, and the banks, there must be also got immediatly after the Lady day, or before, as the Spring time falleth forth, so as they may be set before the leaues put forth, when the most sap is in them fifteene score willow or fallow setts of ten foot long of the freshest and greenest, which must be carefully carried for bruising of the barke, forth of euery set of that length there may be cut six sets of halfe a yard long, cut colt-footed at both ends, which must be set in the midst of the ridges, where the Ash keyes are sowne two yards asunder one from an other, from end to end, foureteene inches deepe, and foure inches aboue ground. The holes wherein they are to be set, must be made with a spade, full foureteene inches deepe, two foote wide, the setts being put into the holes so deep, the lesse earth must be put in, but neither stones nor grasse, and troden close to the sets, being thus set, how can they in common reason faile but grow? for euery deaw that falleth will nourish them, and keepe them so moyst, as they will grow more in two yeares, then an ordinary long set will doe in three, and the Ash-keyes will grow so thicke, as they will keepe the ground continually moist. There must be also set in like sort two rowes of willow and fallow betweene the edge of the ditch, and the first ridge, the one foure foot off the first ridge, the other foure foot off that, and so on the other banke of the other side, if it be not planted for timber, by which meanes there may bee contained

sixteene rowes in euery acre, and in euery row a hundred and ten willow and fallow plants, which in Iune after they be 3 yeares olde, all the vnder boughes must be cut away, and onely foure left of euery roote of the straitest and tallest, the vnder-boughes will be springes and rods for Thechars, and the worst good fewel for baking and brewing, which will be more worth then the labour.

The number of willow and fallow poles, being foure of euery roote, is seuen thousand and forty, and when the Ash and Sekamores are three yeares olde, they must be all drawne vp, and onely tenne of the Ashes left to grow a foote from euery willow or fallow, a foot asunder one from an other euery way in the rowes, and at the ends and sides all must be drawne vp, and onely three rowes left to grow vpon a foote and a halfe of ground vpon the ditch bankes, round about the close for a fence, halfe a foote off the hedge of the banke, and halfe a foot asunder one from another euery way, not so close as they may grow directly one against another, but so as they may fulfill the open places of each other in the rowes, and as they grow great, that one row may be the fence, the other rowes may be felld in Iune, so as they may growe no more, and those that doe remaine for the fence must be topped when they are growne so high as the bodies may be fiue yeards high from the ground, and so to stand as pales, which will be as strong a fence as any wall, being thus topped, they would be lopped after fiue yeares growth, before the wood be too high for shaking them loose at the rootes by wind, and afterwards at euery tenne yeares, being lopped, as before is directed, will yeeld euery ten yeares, at the least, three loade of wood of a pole. The yoong Ashes and Sekamores that are to be drawne vp, must bee drawne in the new of the moone, the wind being South or West, and presently set, the toppes of the Ashes being cut off as quicke, and set in the bottome of thorne hedges, halfe a foote asunder, which being defended by the thornes, will be in a few yeares a very profitable and an euerlasting fence, or being set vnder bushes that may defend them, will soone grow to be trees; or being set as quicke where men do inclose, will sooner be a fence then thornes, and raise more profit by many degrees, as doth appeare, and more easily may be conceiued.

The number of the ash poles in seuen acres is seuentene thousand and six hundred, the totall of all the poles contained in one acre, is foure and twenty thousand six hundred and forty, rated at six pence the score, when they are seuen yeares old, arise to thirtie pounds, sixeteene shillings an acre euery seuen yeares, at the least (ouer and aboue the wood that will arise about the fence, euery willow and fallow set was worth a penny forty yeares since, and three poles wil make two better faggots then euer were sold in *London* for pence apeece these fifty yeares, the toppes of the poles will make good bauins, more worth then all the workmanship, and by other meanes there may be more made.

This wood must be all felld and carried off the ground before the end of March, for hindering the Spring. The eight acre may be all plowed from end to end into one land, leauing a yard of either side, one from the ditch, the other from the last ridge of that side, then beginne at either side of that acre, a yard off that end, where the gate is not to be set, and set a yard, as before is directed for timber, and so set from end to end, and from side to side all that acre, alwayes leauing one yard euery way, and set another, by which means there may be raised in that one acre twelue hundred and ten trees for timber, euery tree to haue foure yards of ground to grow on: if they grow too thicke, it is easier to take some away, then to put more to, which being kept (as before) will grow cleane without knots taper-like, with so small tops, as if they should grow in rows, they will neuer hurt wood or come by shaddow or dropping.

And if the owner of the ground list to raise more Ash plants, all the whole close may be plowed and sowne with keyes or other meanes, and raked in. Many there are that desire to raise wood by a very vnprofitable course, by remoouing yong trees from the ground where they grow and prosper, and sets them againe where 10 of 20 neuer grow: the speciall reasons, are in respect that they are either remoued vnto a worse soile, or too long vnset after they are taken vp, or not set with the same side to the Sunne that was before, or not being taken vp in due time, about the middest of September, before the sappe be returned to the roote (for as trees grow vpward in Summer, so doe trees grow in the rootes in winter) or not liking, grow hide-bound; the

helpe to that is, to flitte them from toppes to roote foure flitts in the barke, in Aprill, the winde being west or south) or set deeper then before, or not maintained with stakes and bushes, to preserve them from winde and cattell, or being when they are new set, stolne or shaken loose at the rootes, by the poore that intend to steale them; And many there be that are very desirous to plant, and some that would preserve that which is planted, are discouraged by the poore that do cut it forth of the springs, breake their hedges, and euery way spoile & steale; whereupon ariseth a great griuance betweene such as haue wood, and the poore: the one will haue it, (as they say) although they die for it; the other will destroy it, though they and their posteritie repent it: the only remedy is, a generall plantation.

If the whole kingdome were to be inclosed, by the sowing of these grounds all ouer with the aforesaid masse and seeds of wood (but not of sykamore, for they will not prooue so well after they are cut, as other wood) they must be set with the toppes; there would be sets enow soone gotten, to inclose all; and if a third part of all the ground inclosed, and hereafter to be inclosed, were continually kept in tillage, it would be the greatest benefit to the King and kingdome that can be deuised, there would be more corne, bieues, muttrons, butter and cheese, by many degrees, then there is, and much more worke for labouring men: and for firewood, timber, and corne, wee should exceed all Nations; some scantling may be taken therof in euery county of this kingdome, where the barest grounds inclosed doe (in profite) farre exceede the best vallies; the people much the richer, and abler of body to serue their Prince, and defend their countrey, and the kingdome securer from inuasion then champaine countries: The Ashe and Sykamore sets that may be raised soorth of euery Acre, will pay for the willow and fallow sets.

If any would plant lowe grounds, the willow and fallow sets must be so long, as the water may seldome or not at all stand ouer the heads of the sets; in such grounds they may be set but a yard asunder, so as there may be raised foure thousand eight hundred and forty plants, but not any other wood: if the vnderboughes, (as before) be cut away, and only foure left at the first felling: afterwards, as the rootes grow broader, there may bee
more

more left. The taking away of the vnder-boughes will greatly improoue the rest. And whereas some make doubt, that willow and fallow will not grow vpon drie ground, or on any soile. Beleeue it, I write no vntruth, nor no more then I haue seene, and know to be true: and to make some prooffe thereof, Master *Thomas Spencer* of *Clardon* in *Warwickshire*, a man knowne to many, shewed me about Bartholomew tide, in the yeare of our Lord, one thousand six hundred and twelue, being the driest spring that yeare that was of many yeares before, or since, many hundreds of fallow or willow setts, that hee had caused to bee set the same yeare, which setts are not aboue a foote long aboue ground, set in bare; drie, grauelly, hungry ground; notwithstanding the drie-nesse of the yeare, there were very few that tooke not; and the rest had so taken roote, as they put forth at the rootes, by the moistnesse of the deaws, but not at the toppes: and he himselfe told mee in Candlemasse Terme, one thousand six hundred and thirteene, when this Booke was in Printing, that they tooke at the ground, and prospered well: hee further told me, that of his owne knowledge, the seed of willow would grow. And it hath beene reported to me by men of good worth, that the chippes of willow wil grow; which I doe the better beleue; for I haue often seene the chippes of poplar, aspe, and awbell grow, so as they would not be destroyed but by plucking them vp by the rootes; for of all wood, cattell will least browse of those woods. And further, that willow and fallow will grow on any ground, hauing two foote soile, it is to be seene by as many as will obserue it, that in all chalkie, flinty, sandy, or any other drie ground, they will grow from hedge-stakes. And I haue seene, and it is to be seene, as great fallow and willow trees come of stakes, as may be seene in any lowe grounds, both sounder and longer lasting by many degrees, for all will put forth so neare the ground, as I do write, and in woods on the driest ground that is; there is no wood comparable to those woods in growth, but Ash: for chips of Elme, I haue seene many trees of them. And for the betrer prooffe thereof, sir *Thomas Tresham* of *Newton* in *Northamptonshire* shewed mee the last Summer, at the least a dozen trees, that of his owne knowledge came of chips. And about Michaellmasse last, it pleased the Earle of *Kent* to inuite mee to dine with him in *Bedford*, where

where there was at least seven or eight Knights and Esquires at the Table, some of which doubted of the growing of the chips of Elme; whereunto maister *Lee* a Iustice of Peace, dwelling within halfe a mile of *Bedford* affirmed, saying, they would grow; for he caused an Elme to be felld at the Spring of the yeare, and to be carried to his house, into a yard where no cattell came, and where the Elme was squared, and the chippes cleane raked off: notwithstanding, many of the smallest that remained, sprung vp as thicke as hemp-seed on a land: and other proofs I could make, if occasion serued: as for the rootes or boughes, I haue heard no doubt made of them, neyther can any make doubt of the growing of the masse or seedes of any other wood. And for any wood to grow so thicke, it is lesse to be doubted, for in *Cambridgeshire*, where most springs of Elme are, it is to be seene, that after the vnderlings be cut away, they grow as thicke as I write of, where they are left so thicke, as for Ash or any other seedes of wood, it will (for so few or more yeares) grow so thicke: And I haue seene many Groues of Ash that haue beene set, that after many yeares haue taken holde, and growne so thicke. The last Summer, about Michaelmasse, it pleased sir *Walter Montague* to shew me a Groue by his house, within fīue miles of *Northampton*, which he had caused to be set not much thinner; in which Groue he had caused some to be felled that liked not, which forth of the rootes of such as were felled, there were yong Ashes sprung vp, of a yard and three quarters high, of one yeares growth. And I haue seene the like in many places: the onely way to make yong trees after they are remoued, to grow more in one yeare, then after they are moued, in three, is to fell them by the ground, after two yeares, when they haue taken roote. If any shall aske why wood doth not proue so well by many degrees: In all springs of wood, I answere, there are two reasons at the least why it doth not, the one is, no wood groweth so speedily, by the halfe, as these woods; but the speciall reason is the Springs, are not ordered, they are fuller of hasell, maple-bushes, and other wood that riseth to small prooffe, and so thicke of vnderlings, as the other can not generally prosper, but some few that get vp and choake all the rest. Neither is the sixt part of any springs that I see furnished with such proouing wood. And for further prooffe for timber,

one

one master *Skipwith* in Norffolke, within three miles of *Downam* shewed mee a Groue, planted by his father, of foure and thirtie yeares growth, of Oakes and Ashe, growne so tall, as Herons haue bred in them these three yeares past: which trees grow not about two yards one from another, some planted by akornes, and Ashe-keyes, and some by yong sets, cut and vsed as quicke: some difference there is of their growth, the setts are the taller, but little the bigger. All these kindes of planting, by common reason and experience cannot be denied, nor the profite thereof: by reason thereof it may appeare, that whereas there is contained in this kingdome fise and twentie millions of Acres whereupon wood will grow and prosper, ouer and aboue the waste whereon wood will not prooue, if it were planted, as on stony hilles, great moorish, linggy moores and mosses, waters and watery moorish fennes and high-ways: forth of which fise and twenty millions take but one hundred thousand acres, and diuide it into tenne thousand parts, it will yeelde to euerie parish in this Kingdome, if there were tenne thousand (as there is not) two thousand fise hundred acres; take foorth of the two thousand fise hundred, but one hundred and tenne Acres, and plant tenne Acres thereof in rowes, as before is directed, and there may be raised in tenne Acres of the hundred and ten, foure and twenty thousand two hundred trees for timber, two yards betweene euery one of them one way, and ten the other, to furnish euery parish, and the ground thereby much improved, and within thirty yeares the fences of all grounds, being made, as before, will yeeld such store of fire-wood, as there will be no neede of the aforesaid plantation, for firewood, or any other springs, but all may be stocked vp and conuerted to tillage and pasture. For the better effecting of this businesse, it is thought conuenient, that an Act might passe, that it may be lawfull for all men to inclose ground for this plantation in common fields, and many townes may be furnished by their commons.

So as if coales should decay neare the coasts (as they doe too fast in many places within the Land) which as yet is no more feared, then the want of wood was generally feared through the whole Kingdome, specially in *London*, *Cambridge* and *Oxford*; forty yeares agoe, when the porest sort scorned to eate a peece of

meate roasted with sea-coles, which now the best Magistrates are constrained to doe. If a man in that time should haue fore-told this want of wood, that now the whole Kingdome is come to, it would haue been holden a thing vnpossible, the plenty of wood was then so great, and so good means to continue the same: with much more reason may it now bee feared, that in the like time coles may be more decayed, considering the aboundance that is spent of them, not onely in this Realme, but in other Nations, and no meanes to increase them: for by experience it is generally knowne, that after they be once got, they neuer more grow or increase.

And briefly to shew the premiffes, first, that one thousand two hundred and ten trees may be planted for timber in one acre, and euery tree to haue foure yards of ground to grow on, it is not to be doubted, for there is to be seene in euery county some groues that haue beene planted by the plough, and some by hand within three score yeares, that grow as thicke both of Oake and Ash, and naturally groues of Elme and Wich trees.

And that timber trees will grow and thriue well in rowes, being two yards asunder one way, and tenne the other, it is also to be seene in euery county about many closes, and on all foiles, eyther Oake, Ash, Beech, or Elme that do grow, specially in towns, by the high-ways sides, trees that are a hundred or two hundred yeares old, planted or preserued, when wood was not of the worth that it is in this instant, which in this age is thought vnpossible to be so raised: nay, which is more strange, as great husbands as we thinke our selues, it is apparent in euery towne, men choose rather to make dead hedges euery yeare, then to plant, as they may doe by wood, and make a fence for hundreds of yeares, as may appeare by the wood already growing in such fences, which will yeelde yearely profite, and preuent the great complaints that are daily made of the poore for the breaking of hedges. And that all fences may be made of trees onely, it is euident, especially about woods, where in the hedges there is want of thornes, they plash wood, which hath laine, in common reason, as it doth appeare by the greatnesse of the trees, at the least, a hundred yeares, and growne so close as no man can see between the trees, being plashed, and for the most part, laid so lowe as
beasts

beasts browse off the tops, much more will they last many more yeares, being laid, and not cut at the rootes to receiue water, the toppes being laid so high as cattell cannot reach them, or being vnlayed, may grow vpright, to stand as pales, which may be lopped for fire-wood, and browse for Deere or Cattell. Thus much for fences of Parkes and other inclosed grounds, and that this kinde of fire-wood may be planted so thicke and prooue so well, it may appeare in all coppies, or springs of wood, that on Ash or Sallow rootes they grow thicker then I proportion; and all men know that willow and fallow is inferiour to no wood in growth, especially being planted so neare the ground. The reason why all spring woods make not such prooffe, is, that some springs stand, for the most part, of beech, some with oake, some with hornebeane, and many with maple, hasell and thornes, all which are no proouing wood for fire. I neuer met with any but they approoue, that Ash, Sallow, or Willow, doth grow more in one yeare, then any of the aforesaid woods will grow in two: and Elme and Wich is not much inferiour to the Ash in growth; so it is apparent, that if all men would furnish their springs with those kinds of wood, and cut away all the vnderlings at 3 yeres growth, when the wood will be worth the labor, no man would stocke or grub vp woods, as they doe, except it were into rowes; and that all those kindes of woods will grow and prosper being preserved and maintained, no man will make doubt, in regard that both reason & experience makes prooffe thereof, and where those kinds of wood grow not so thicke, approuedly some being plashed from the rootes of them that grow, being shread, and a little of the tops cut off, and laide three fingers deepe in trenches, and couered with earth, will grow and prosper. And that euery bush will breede a tree (the meanes being set rather of a yong plant that may be raised by nurseryes, then by the other meanes before set downe, in regard that I finde all kinde of maste subiect to mice and other vermine. It is apparent in all forrests, chases, parkes, and commons, inclosed grounds, hedges, and high-ways sides, by the bushes that grow about many trees, both old and yong; and many there be that confesse all this to be true by experience, that little obserue their owne experience. Thus by his Maiesties fauor and bounty, together with the boun-

tic and good instructions that I receiued from the worthie Common-wealths men : I holde my selfe bound in conscience , not onely to seeke all experience that may tend to this businesse , but likewise to put all men in minde thereof , to the end that if Sea-coles shall decay , good take-heede come not too late.

The Premisses considered , it is generally hoped , that some good course will be taken , to preuent so great an inconuenience. Thus with an honest intention , for the publique good of this kingdome , the content of his Maiestie , and all good men , I conclude , leauing the successe to God , who is the director of mens harts to all good offices.

FINIS.